

WHAT IS CLAIMED IS:

1. An electronic system, comprising:

a portable electronic apparatus having a built-in  
heat generating component and a first connector to  
5 supply power; and

a cooling apparatus detachably coupled with the  
portable electronic apparatus to cool said heat  
generating component, the cooling apparatus having a  
cooling module with an electric fan and being thermally  
10 connected to said heat generating component when  
coupled to said portable electronic apparatus, and  
a second connector connected to said electric fan and  
connected to said first connector when said cooling  
apparatus is coupled with said portable electronic  
15 apparatus, wherein the second connector receives the  
power from the first connector to supply the power to  
said electric fan.

2. The electronic system according to claim 1,  
wherein said first and second connectors respectively  
20 have terminals supplied with a signal to control  
rotation of said electric fan.

3. The electronic system according to claim 1,  
wherein said first and second connectors respectively  
have terminals supplied with a signal to recognize  
25 mutual coupling of said portable electronic apparatus  
and said cooling apparatus.

4. The electronic system according to claim 1,

wherein said portable electronic apparatus has a thermal connection section to receive heat from said heat generating component, and the cooling module of said cooling apparatus includes a heat sink thermally  
5 connected to said thermal connection section that is cooled by said electric fan.

5. An electronic system, comprising:

a portable electronic apparatus having a built-in heat generating component and a first connector to  
10 supply power; and

a cooling apparatus detachably coupled with the portable electronic apparatus to cool said heat generating component, the cooling apparatus having a cooling module with an electrically-driven cooling  
15 device and being thermally connected to said heat generating component when coupled to said portable electronic apparatus, and a second connector electrically connected to said cooling device and connected to said first connector when said cooling  
20 apparatus is coupled with said portable electronic apparatus, wherein the second connector receives the power from the first connector to supply the power to said cooling device.

6. An electronic system, comprising:

25 a portable electronic apparatus having a first heat sink thermally connected to a heat generating component, and a first connector to supply power, the

first connector being attached to the first heat sink;  
and

5 a cooling apparatus detachably coupled with the  
portable electronic apparatus to cool said heat  
generating component, the cooling apparatus having a  
cooling module with a second heat sink being thermally  
connected to said heat generating component when  
coupled to said portable electronic apparatus, an  
electric fan to provide cooling air to the second heat  
10 sink, and a second connector attached to the second  
heat sink being connected to said first connector when  
said cooling apparatus is coupled with said portable  
electronic apparatus, wherein the second connector  
receives the power from the first connector to supply  
15 the power to said electric fan.

7. The electronic system according to claim 6,  
wherein said second heat sink is thermally connected to  
said heat generating component through said first heat  
sink.

20 8. The electronic system according to claim 7,  
wherein said cooling apparatus has an apparatus main  
body on which said portable electronic apparatus rests,  
said second heat sink is movable between a thermal  
connection position where it is projected from said  
25 apparatus main body and is thermally connected to said  
first heat sink, and a housing position where it is  
contained within said apparatus main body, and when

said second heat sink is moved to the thermal connection position, said second connector is electrically connected to said first connector, and when said second heat sink is moved to the housing position, electrical connection between said second connector and said first connector is disengaged.

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9. The electronic system according to claim 8, wherein said cooling apparatus has an operation mechanism to selectively move said second heat sink to the thermal connection position or said housing position, and a switch to close a circuit to connect said second connector and said electric fan when said second heat sink is moved to the thermal connection position, and to open said circuit when said second heat sink is moved to the housing position, the switch being opened and closed by said operation mechanism.

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10. The electronic system according to claim 6, wherein said first and second connectors respectively include terminals to be supplied with a signal to control rotation of said electric fan.

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11. The electronic system according to claim 6, wherein said first and second connectors respectively include a terminal to be supplied with a signal to recognize mutual coupling of said portable electronic apparatus and said cooling apparatus.

12. An electronic system, comprising:  
a portable electronic apparatus having a built-in

heat generating component and a first expansion connector for function expansion, and a first connector to supply power;

5 a cooling apparatus detachably coupled with said portable electronic apparatus to cool said heat generating component, the cooling apparatus having a first cooling module with an electric fan and being thermally connected to said heat generating component when coupled to said portable electronic apparatus, and a second connector electrically connected to said electric fan when said cooling apparatus is coupled with said portable electronic apparatus, wherein the second connector receives the power from the first connector to supply the power to said electric fan; and

10 an expansion apparatus detachably coupled with said portable electronic apparatus in place of said cooling apparatus to expand functionality of the portable electronic apparatus, the expansion apparatus having at least one functional component to expand the functionality of said portable electronic apparatus,

15 a second cooling module having a second electric fan and being thermally connected to said heat generating component when coupled to said portable electronic apparatus, and a second expansion connector, electrically connected to said functional component and said second electric fan, being connected to said first expansion connector when said expansion apparatus is

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coupled with said portable electronic apparatus.

13. The electronic apparatus system according to claim 12, wherein said first and second cooling modules each include a heat sink to be thermally connected to  
5 said heat generating component.

14. A cooling apparatus, detachably coupled with a portable electronic apparatus having a heat generating component and a first connector to supply power, to cool said heat generating component,  
10 comprising:

a cooling module having an electric fan and being connected to said heat generating component when coupled with said portable electronic apparatus; and

a second connector, electrically connected to said  
15 electric fan, being connected to said first connector when coupled with said portable electronic apparatus to supply said electric fan with the power received from the first connector.

15. The cooling apparatus according to claim 14,  
20 wherein said cooling module includes a heat sink thermally connected to said heat generating component when coupled with said portable electronic apparatus and is cooled by said electric fan, and said second connector is coupled to said heat sink and exposed  
25 outside the cooling apparatus.

16. A cooling apparatus, detachably coupled with a portable electronic apparatus having a heat

generating component and a first connector to supply power, to cool said heat generating component, comprising:

5 a cooling module having an electrically-driven cooling device and being connected to said heat generating component when coupled with said portable electronic apparatus; and

10 a second connector electrically connected to said cooling device and thermally connected to said first connector when coupled with said portable electronic apparatus to supply said cooling device with the power received from the first connector.

17. A cooling apparatus, comprising:

15 a cooling module, having an electric fan, adapted to couple with a portable electronic apparatus having a heat-generating component and a first connector to supply power; and

20 a second connector, electrically connected to said electric fan, being connected to said first connector when coupled with said portable electronic apparatus to supply said electric fan with the power received from the first connector.

18. A cooling apparatus, comprising:

25 a cooling module, having an electrically-driven cooling device, adapted to couple with a portable electronic apparatus having a heat generating component and a first connector to supply power; and

a second connector, electrically connected to said cooling device, being connected to said first connector when coupled with said portable electronic apparatus to supply said cooling device with the power received from  
5 the first connector.